



UNITED STATES PATENT AND TRADEMARK OFFICE

cl
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/813,482

03/30/2004

Paula Olhoft

600.479US2

4796

21186

7590

10/04/2007

SCHWEGMAN, LUNDBERG & WOESSNER, P.A.

P.O. BOX 2938

MINNEAPOLIS, MN 55402

EXAMINER

BAUM, STUART F

ART UNIT

PAPER NUMBER

1638

MAIL DATE

DELIVERY MODE

10/04/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/813,482

Applicant(s)

OLHOFT ET AL.

Examiner

Stuart F. Baum

Art Unit

1638

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 57-76 is/are pending in the application.
- 4a) Of the above claim(s) 69 and 70 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 57-68 and 71-76 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendment filed 6/14/2007 has been entered.

2. Claims 57-76 are pending.

Claims 1-56 have been canceled.

Claims 69-70 have been withdrawn from consideration for being drawn to non-elected inventions.

Claim 76 has been newly added and is drawn to the elected invention.

3. Claims 57-68 and 71-76 are examined in the present office action.

4. Rejections and objections not set forth below are withdrawn.

5. The text of those sections of Title 35, U.S. Code not included in this office action can be found in a prior office action.

6. This application contains claims 69-70 drawn to an invention nonelected with traverse filed 12/4/2006. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Objection

7. Claims 57 and 62 are objected to for being drawn to non-elected inventions. Correction is requested.

Claim Rejections - 35 USC § 102

8. Claims 58-66, 68 and 71-74 remain rejected under USC 102 (b) as being anticipated by Perl et. al., (1996, Biotechnology 14(5):624-628; listed in IDS). This rejection is maintained for

Art Unit: 1638

the reasons of record set forth in the Official action mailed 3/13/2007. Applicant's arguments filed 6/14/2007 have been fully considered but they are not persuasive.

Applicants contend Perl et al report that cysteine did not reduce necrogenesis (page 5 of Remarks, 3rd paragraph). Applicants contend Perl et al report that stably transformed grape was obtained after co-cultivation of grape callus with PVPP for 48 hours, followed by incubating the callus in a double-layer medium with PVPP in the solid layer and DTT in the liquid layer for 7 days (sentence bridging pages 5 and 6 of Remarks). Applicants contend Perl et al do not teach that sulfhydryl-containing agents can enhance Agrobacterium-mediated transformation of monocot tissue or cells and Perl et al do not disclose 50 mg/L to 2000 mg/L cysteine can enhance Agrobacterium transformation of plant tissue or cells (page 6 of Remarks, 1st full paragraph).

The Office contends Applicants are arguing limitations that are not anticipated by the Perl et al reference. The Office contends that the amendment to claims 57 and 62 does not overcome the teachings of Perl et al, and as such, Perl et al anticipate the claimed invention.

Claim Rejections - 35 USC § 103.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 57-60, 62-67, 71-73 and 75-76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Enriquez-Obergon et al (1997, Biotechnologia Aplicada 14:169-174).

The claims are drawn to a method for the stable transformation of monocot plant tissue or cells comprising contacting monocot plant tissue or cells with *Agrobacterium* containing a recombinant DNA and a sulfhydryl-containing agent, wherein said agent enhances stable transformation of the monocot plant tissue or cells relative to corresponding monocot plant tissue or cells without said agent, wherein if the sulfhydryl-containing agent is cysteine, cysteine is present at a concentration of 50 mg/L to 2000 mg/L, or wherein transformation efficiency is at least 10% greater, or at least 0.5% greater, or enhanced by at least 5-fold, or wherein transformed tissue or cells are identified by selection, or wherein the plant tissue or cells are maize, wheat or rice tissue or cells, or wherein the plant tissue or cells are sugarcane.

Enriquez-Obergon et al teach a method for the stable transformation of the monocot sugarcane comprising contacting meristematic stem tissue and *Agrobacterium* containing recombinant DNA (p. 170, Figure 1) with the sulfhydryl-containing agent cysteine (p. 170, Table 1), where the cysteine was present in a solid medium (p. 172, column 1, 1st full sentence), wherein the efficiency of stable transformation is enhanced by at least 0.5% or 10% greater than in the absence of the agent, where the transformed tissue is identified by selection (Abstract, lines 5-7), and wherein a recombinant DNA contains selectable detectable markers (p. 170 Figure 1). Enriquez-Obergon et al teach the regeneration of stable *Agrobacterium* transformed transgenic sugarcane plants. See p. 174, 2nd column, final ¶.

Sugarcane is a monocot plant. The *Agrobacterium* used contained maize ubiquitin promoter-BarR coding sequence DNA and a CaMV 35S promoter operably linked to a uidA (GUS) coding sequence. This DNA functions as a selectable marker for Bar-resistance, as well as a detectable marker, since the uidA (GUS) coding sequence expression allows visualization by causing the development of blue color under the proper conditions. The sulfhydryl-containing agent cysteine was present in solid medium with the *Agrobacterium*/ plant material (p. 172, column 1, 1st full sentence).

Enriquez-Obergon et al indicate that “[t]he use of an antioxidant mix [including cysteine] caused an 80% cell death decrease in respect to the controls...”. (Abstract, lines 5-7). “In this study we demonstrated that...cysteine ...can decrease the hypersensitivity reaction on the cut zone in the sugarcane meristematic explants. The decrease of cell death rates after cutting improved the competence of plant tissue to the *Agrobacterium*-mediated gene transformation. In the opposite cases, a fast hypersensitive response made the transformation impossible.” (p. 173, ¶ bridging p.174). The Examiner interprets this information to mean that the transformation rate was enhanced by at least 0.5% or 10% or 5 fold compared to the efficiency of transformation in the absence of the cysteine.

Enriquez-Obergon et al do not teach a cysteine concentration of between 50 mg/L to 2000 mg/L or transformation of maize, wheat or rice tissue or cells.

Given the recognition of those of ordinary skill in the art the value of transforming a sugarcane plant to improve the plant’s agricultural yields and industrial production as taught by Enriquez-Obergon et al, one skilled in the art would be motivated to use the method of Enriquez-Obergon et al for transforming sugarcane and to optimize process parameters by varying the

Art Unit: 1638

cysteine concentration to be between 50 mg/L and 2000 mg/L. One skilled in the art would also be motivated to use the method of Enriquez-Obergon et al for the transformation of other monocot plants, such as maize, wheat or rice, because one of ordinary skill in the art recognizes that a transformation procedure that works for one member of a group will also work for other members of the group. Maize, wheat, rice and sugarcane are all members of the monocot group of flowering plants.

Thus the claimed invention would have been *prima facie* obvious as a whole to one of ordinary skill in the art at the time it was made, especially in the absence of evidence to the contrary.

10. No claims are allowed.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Art Unit: 1638


12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stuart F. Baum whose telephone number is 571-272-0792. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg can be reached at 571-272-0975. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-1600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stuart F. Baum Ph.D.
Primary Examiner
Art Unit 1638
September 7, 2007



STUART F BAUM, PH.D.
PRIMARY EXAMINER